

# ENVIRONMENTAL ENGINEERING, MS

The department offers programs leading to the Master of Science in civil engineering, Master of Science in engineering (environmental engineering) and Doctor of Philosophy degrees in civil engineering. Research programs in the department include environmental quality and water resources; management and safety of transportation systems; structural engineering including assessment, renewal, and protection of infrastructure; and construction engineering and management. Laboratory facilities are provided for graduate research and instruction in these and other areas.

## Admissions

In addition to the minimum Graduate School admission requirements, to be considered for regular admission, an applicant should have enrolled in a baccalaureate degree from an institution accredited by the Engineering Accreditation Council (EAC) of ABET Inc. Applications from a non-EAC/ABET-accredited program will also be considered. The requirements for regular admission include

- enrolled in a Bachelor's degree in civil, construction, environmental engineering, or related fields at the time of application. A completed bachelor's degree is required prior to enrollment in the graduate program.
- A combined verbal and quantitative GRE requirement of 300 or greater (see below for exceptions). Applicants with three or more years of field-related post-Bachelor's work experience may inquire about a GRE waiver request by contacting the Graduate Program Director **after** submitting a complete application with a detailed resume. There is no minimum score on the writing section of the GRE for admission to the MS Program.
- A current resume.
- A concise Statement of Purpose. This short document should describe the reasons for pursuing an advanced degree as well as possible research interests.
- Three letters from recommenders. These recommenders may be previous faculty or supervisors.
- A TOEFL/IELTS/DUOLINGO score for non-native English speakers who are required to submit an English Language test score (as per graduate school requirements)

See the Admission Criteria section of this catalog for more information.

## Curricular Requirements

The Master of Science in Environmental Engineering program is offered with both a thesis option (Plan I) and a non-thesis option (Plan II). The designation of the selected program is not required or expected at the time of application. All MS students on teaching or research assistantships in the department are generally expected to pursue the thesis degree option. However, the Plan-II option is also allowed for students on teaching or research assistantships. All students must complete a total of 30 credit hours to meet the requirements.

All graduate students in environmental engineering are required to take "core courses" based on the student's area of study interest. **All M.S. students are required to take a total of nine credits of core courses, including six credits of area-specific core classes and three credits of data science classes ( see below for details)**

## Master of Science—Thesis Option (Plan I): 30 Credit Hours

Candidates for the master's degree under Plan I must earn a minimum of 24 semester hours of credit in coursework and write a thesis (a minimum of six semester hours of thesis research, CE 599, is required).

- A minimum of 24 credit hours of coursework is required. The student is required to have a minimum of 15 credit hours of CE-prefixed courses.
- A minimum of 6 credit hours of thesis research (CE 599) is required.
- The graduate advisory committee may require additional prerequisite courses for those students without an ABET or EAC-accredited degree.
- A student's thesis must be approved by the student's graduate advisory committee. The student must pass a final comprehensive examination, which is typically a presentation and defense of the thesis. A student is given a maximum of two attempts to defend their thesis successfully. In addition, the student must satisfy all university requirements defined in the current edition of the University of Alabama Graduate Catalog.

Code and Title	Hours
<b>Core Coursework ( 6 credits of area specific coursework + 3 credits of Data Science coursework)</b>	
<b>Environmental Area courses</b> <b>6</b>	
CE 521 Environ Eng Microbiology	
CE 522 Solid Hazardous Waste Managmnt	
CE 524 Water & Wastewater Treatment	
CE 526 Groundwater Mechanics	
CE 575 Hydrology	
<b>Data Science</b> <b>3</b>	
CE 573 Statistical Applications	
CE 586 GIS for Civil Engineers	
PH 551 Machine Learning	
GY 518 Spatial and Geostats	
ST 560 Statistical Methods	
<b>Other Courses</b> <sup>1</sup> <b>15</b>	
Commonly taken courses include:	
CE 521 Environ Eng Microbiology	
CE 522 Solid Hazardous Waste Managmnt	
CE 525 Air Pollution	
CE 526 Groundwater Mechanics	
CE 529 EWR Proposal Writing	
CE 570 Open Channel Flow	
CE 576 Process Hydrology	
CE 586 GIS for Civil Engineers	
CE 591 Special Problems	
And other Approved Courses	
<b>Thesis Course</b> <sup>3</sup> <b>6</b>	
CE 599 Thesis Research	
<b>Total Hours</b>	<b>30</b>

- Only 400-level courses without 500-level counterparts are allowed and must be approved prior to taking the class. A maximum of 6

hours of approved 400-level courses can be used for course work requirements. Students should complete the Graduate School's "Approval of a 400-Level Course for Master's Credit" form.

- Students are responsible for all forms and must route all forms through the department prior to submission to UA's Graduate School.

## Master of Science-Non-Thesis Option (Plan II): 30 Credit hours

Candidates for the master's degree under Plan II must earn a minimum of 30 credit hours of credit, including 27 credits of approved coursework, and complete a 3-credit class (CE 501) for the culminating experience.

- A minimum of 27 credit hours of approved coursework, including a minimum of 18 hours of CE-prefix classes.
- Students are required to take a total of nine credits of core courses, including six credits of area-specific core classes and three credits of data science classes.
- must complete a 3-credit-hour MS Capstone Project Plan-II course (CE 501).
- Culminating Experience or Capstone (CE 501): This must be taken during the graduating semester. This requires the student to develop a research paper, a policy and practice paper, or an equivalent culminating experience which is graded by the student's graduate advisor. This is taken with permission under the direction of the student's graduate advisor. The graduate advisor must be a full member of the department's graduate faculty.
- Only 400-level courses without 500-level counterparts are allowed and must be approved prior to taking the class. A maximum of 6 hours of approved 400-level courses can be used for course work requirements. Students should complete the Graduate School's "Approval of a 400-Level Course for Master's Credit" form.

Code and Title	Hours
<b>Core Coursework ( 6 credits of area specific coursework + 3 credits of Data Science coursework)</b>	
<b>Environmental Area courses</b>	<b>6</b>
CE 521 Environ Eng Microbiology	
CE 522 Solid Hazardous Waste Managmnt	
CE 524 Water & Wastewater Treatment	
CE 526 Groundwater Mechanics	
CE 575 Hydrology	
<b>Data Science</b>	<b>3</b>
CE 573 Statistical Applications	
CE 586 GIS for Civil Engineers	
PH 551 Machine Learning	
GY 518 Spatial and Geostats	
ST 560 Statistical Methods	
<b>CE Coursework <sup>1</sup></b>	<b>18</b>
Commonly taken courses include:	
CE 521 Environ Eng Microbiology	
CE 522 Solid Hazardous Waste Managmnt	
CE 525 Air Pollution	
CE 526 Groundwater Mechanics	
CE 529 EWR Proposal Writing	
CE 570 Open Channel Flow	
CE 576 Process Hydrology	
CE 586 GIS for Civil Engineers	

CE 591 Special Problems	
And other Approved Courses	
<b>M.S Plan-II Capstone Course (Required) <sup>3</sup></b>	<b>3</b>
CE 501 MS Capstone Proj. Plan II	
<b>Total Hours</b>	<b>30</b>

Additional Course Requirements for Students Without an ABET/EAC-Accredited Degree include:

AEM 201 Statics, AEM 264 Dynamics, AEM 250 Mechanics Of Materials I, AEM 311 Fluid Mechanics

Additional Information:

See the Master's Degrees Graduate School requirement section of this catalog for additional information.

## Transfer Credit

12 hours maximum of approved transfer credit. Additional information on Transfer Credit.

## Accelerated Master's Program

AMP (BS/MS) information on the Accelerated Master's Program.

## Comprehensive Examination/Capstone Project

The paper/report, or non-thesis, option requires a research paper, a policy and practice paper, or equivalent culminating experience, which is graded by the student's graduate advisor.

- Taken with permission under the direction of the student's graduate advisor
- The graduate advisor must be a full member of the department's graduate faculty
- It requires the completion of a research paper, a policy and practice paper, or equivalent report with the topic, scope, and format pre-approved by the student's advisor
- Must be taken the semester the student plans to graduate

## Time Limits for Degree Completion Requirements

Maximum of 6 years to complete degree requirements. Graduate School information on Time Limits.

## Student Progress Requirement

Graduate School information on Student Progress.

## Academic Misconduct Information

Graduate School information on Academic Misconduct.

## Withdrawals and Leave of Absence Information

Graduate School information on Withdrawals and Leave of Absence.

## Academic Grievances Information

Graduate School information on Academic Grievances.

## Grades and Academic Standing

Graduate School information on Grades and Academic Standing.

## **Graduate School Deadlines Information**

Graduate School information on Graduate School Deadlines.

## **Application for Graduation Information**

Application for Graduation.